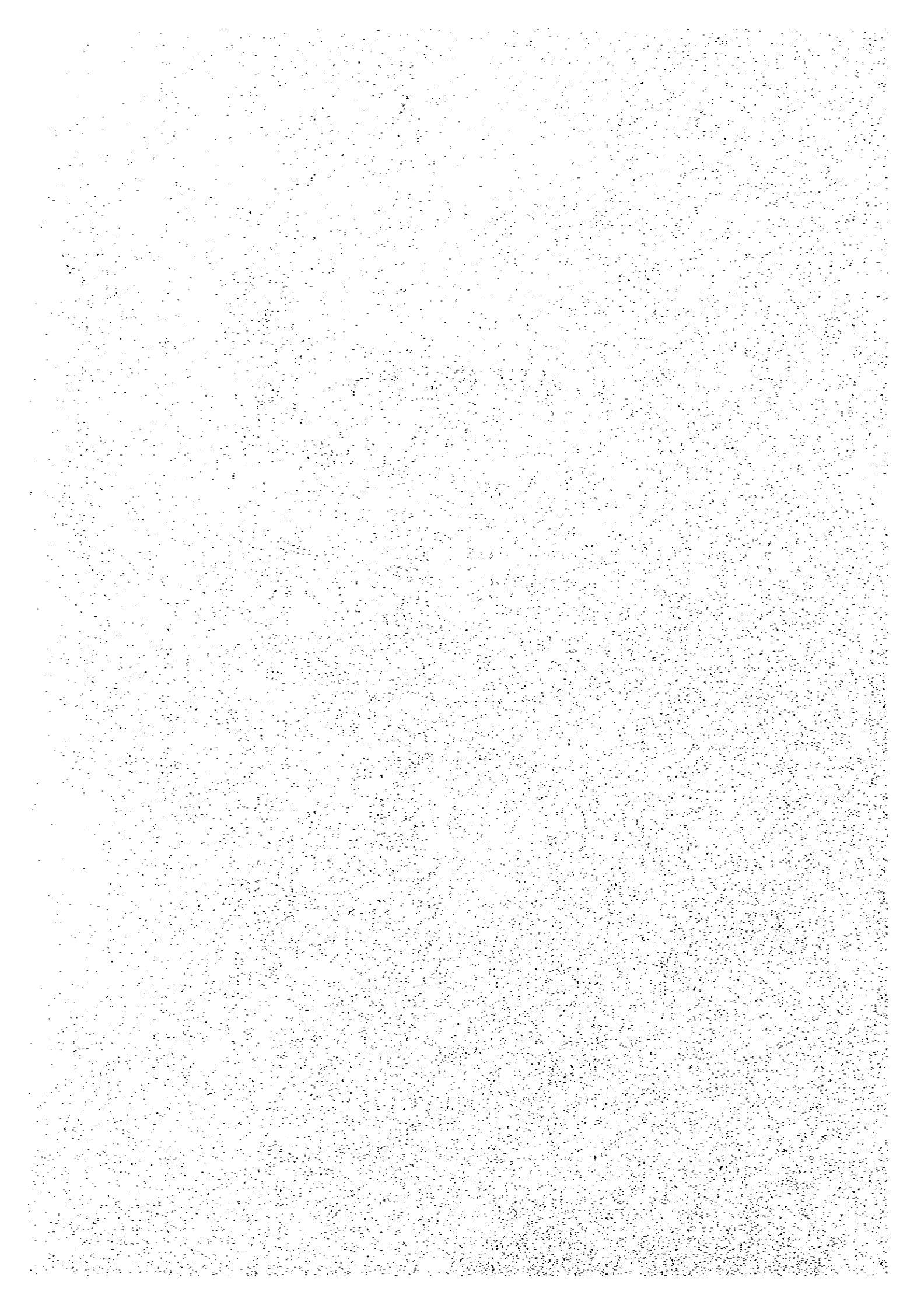


APPENDIX



APPENDIX I - PORT FACILITIES OF OTHER MAJOR PORTS

○ The Port of Cristobal

(1) General

1. The port of Cristobal has six piers divided into 23 berths with a total length of 3,200 meters of berthing space. Piers identified as No. 6, 7, 8 and 16 are finger type piers. Piers No.9 and No.10 are marginal. Pier No.9 is used exclusively for containers and has two 40 ton container cranes. This port connects with the port of Balboa by road and train. It can operate 24 hours a day, 365 days a year.

2. The entrance of the port is protected by a pair of breakwaters. The access and berthing areas are maintained at a maximum draft of 12 m (40 ft).

3. Pilotage, which is obligatory, is offered by the Panama Canal Commission. Launch services, tugboats, transportation, fuel, ship chandlers, rental of mechanic equipment and repair of containers, among others, are provided by private companies.

(2) Port Area

4. Since the port of Cristobal faces the Canal, the border of the port area (land and water) is set against the Canal area in a complex manner. Within the land area of the port, there still remains an exclusive area of the Canal facilities that belongs to PCC. The water area of the port is limited to the nearby area of Piers No.6 to No.10. No anchorage area is located in this area.

5. Pier No.16 is located in the Canal Water Area, however, it is virtually operated by APN. Negotiations for the administration of this area are now underway between APN and PCC.

(3) Piers

6. The finger type Piers No.6, 7 and 8 are poking out to the South-East direction in parallel from the mole constructed on the north side to protect the piers from the dominant north winds and waves in dry season. The face line of the berth of these piers are almost parallel to the dominant direction of the winds.

7. These piers have an approximately 12 m depth and 300 m length, so Panamax type vessels can be berthed on all these piers. However, the slips between these piers are only 90 m wide and inconvenient for maneuvering the large size vessels of today.

8. Among these piers, Pier No.6 is also used for the passenger ships such as the international liner (tourism cruiser) to Colombia.

(4) Container Terminal

9. The most important area of the port is this container terminal which is the only full scale container terminal of APN in Panama corresponding to Panamax type container ships.

10. This terminal consists of two piers (No.9 and No.10), a container yard, a container freight station, cargo handling equipment and other supporting facilities.

11. Pier No.9 is a marginal wharf which measures 12 m in depth and 317 m in length equipped with two 40 ft Gantry Cranes. This pier is located parallel to the other finger type piers.

12. Pier No.10 is also a marginal type of wharf measuring 12 m in depth and 122 m in length. This pier is not equipped with container crane and shares the same container yard with Pier No.9. It serves container vessels, mixed and Ro-Ro type.

13. The container yard with 8.5 ha width has a distorted shape due to the buildings on the land side and PCC facilities on the coastal side. The piling height is 2.5 units and average rotation of 7 days; annual estimated capacity is around 220,000 TEUs. At the south-east end of the container yard, there is a container freight station (CFS) measuring 6,279 m² in width equipped with a track terminal in the north side. A surface railroad track is provided in the south side of the station.

14. In connection to container handling, the shed on Pier No.7 was totally demolished recently to promote efficiency.

(5) Bunkering Facilities

15. Bunkering service is one of the major functions of the port of Cristobal. Pier 16 measuring 347 m long by 137 m wide was constructed in 1914 for the supply of coal and fuel oil to the vessels which transit the Panama canal.

16. A coal pond was originally equipped inside the pier and used as a dumping area for dredging spoils afterward. Three berths are located alongside the pier with a depth between 8.7 m and 12.6 m.

17. Supply of water and fuel is available at all the piers in the port by pipe line network connecting each berth with the fuel oil storage tanks and a water filtration plant located at the Mount Hope area. A pump station is deployed in the Mount Hope Area equipped with 7 pump systems, and it moves oil from storage tanks to loading points at each berth or other storage tanks.

18. Unloading oil from tankers up to storage tanks is limited to Pier No.16 because of the capacity of pipe lines and for safety reasons. The tankers pump oils up to the storage tanks by their own pumps and the pump station assists when it is necessary.

(6) Ship Repair Facilities

19. PCC owns a repair shop complex inside the French Canal area. Almost all kinds of repair work for vessels and machinery related to the Canal operation are available with various facilities deployed within the area of 102.0 ha.

20. The major facilities of this complex are a dry dock and a Synchronlift. In front of the dry dock, there is an approach basin of 1.4 ha width and 12 m depth equipped with two wharves on both sides, Pier No.14 and No.15 respectively. Pier No.14 located on the north side of the basin is 139 m long and 8.8 m deep, and Pier No.15 located on the other side is 273 m long and 10.6 m deep.

21. The Synchronlift, which was put into service in 1984, supports a tug and miter gate repair facility together with a 21 by 122 m concrete ground-level working platform and other subsidiary equipment. This facility can accommodate all of PCC's towboats and Panama Canal Lock's miter gates.

22. The dry dock put in service in 1981 is mainly used for the repair of large floating equipment such as dredgers, crane barge, crane boat and other equipment

which the Synchronlift is unable to lift. It measures 135 m in length, 20 m in width and 7.6 m in depth, and is closed at the entrance with a box type floating caisson.

23. At the south side of the dry dock, there are a group of factories for mechanical works. While this complex can repair only the facilities owned by PCC according to the Canal Treaty, it may have the ability to repair other vessels on a commercial basis.

○ The Port of Manzanillo

(1) General

24. The Manzanillo International Terminal (MIT) is a 50-50 partnership between Panama-based Motores Internacionales SA (MOINSA) and SSA-Panama, Inc., an affiliate of Seattle-based Stevedoring Services of America. The joint venture signed a 20-year concession in 1994 and quickly installed Ro-Ro berths and container facilities, which started to operate the next year.

25. Based on the contract, MIT invests at least 51 million US dollars; the movement tariff of 6 US dollars (adjusted every 5 years) is charged per cargo movement (each loading and unloading) by the state; however, it is exonerated of the payment of the movement tariff for one begging year; at the end of this contract the installation's will be transferred to the state; in such a case it will have the right to use them by paying to the state a users' rate that will not be higher than that applied to other users; and it creates no less than 500 posts preferably from the province of Colon.

26. Some people believe that port privatization is at the core of Panama's quest to realize its destiny as a top-rated maritime nation; the key to this fulfillment is to sign over port facilities, or the rights to build new ports, as concession; and the first example of this strategy is in, with gratifying results indeed. The company now employs more than 600 people.

(2) Main Facilities and Cargo Handling

27. Main facilities are as follows;

- 225-Meter Ro-Ro Berth, 600-Meter Container Berth, and Low Level Ro-Ro

Berth

- 14.0-Meter Draft Access Channel with 200 Meter Atlantic Breakwater removing as Entrance, 13.0-Meter Draft Alongside Berth and 550-Meter Turning Basin
- 25 Hectares of Adjoining Stacking and Container Yard Area
- 83 Hectares of Land Available for Automobile and Container Storage
- Two(2) Panamax (Operational April, 1995) and Four (4) Post-Panamax Container Cranes (Operational September, 1995), and other Terminal Handling Equipment for Grounded Operation such as Transtainers and Tophandlers
- Automated Computer System for Terminal, Vessel, and Gate Activities etc.

28. And, for future expansion capabilities

- 600-Meter Container Berth with Cranes
- 16 Hectares of Container Yard
- Direct Access to Colon Free Trade Zone
- Container Freight Station
- Additional Ro-Ro Berth

29. As of May, 1996, the steamship lines calling this port amount up to fourteen(14). The total number of ship calls was 429 in 1995. And this handled a total of 103,801 containers in the year, while the port of Cristobal handled 113,001 containers (133,595 containers in the previous year 1994). According to MIT, most of their containers don't go/ come via the Canal, around 60% of which are for transshipment to/ from the Atlantic side of North and South America with lower costs, under the competition with the neighboring port of Kingston and so on. (As a result, the neighboring port of Cristobal has also been forced to lower its rates.) In addition, it handled 38,791 vehicles (18,875 unloaded and 19,916 loaded) in the year.

○ The Port of Coco Solo Norte

(1) General

30. The Port of Coco Solo Norte is accessible from the Transisthmian Highway via Randolph Road. It was developed by the United States Armed Forces between the mid 1920's and early 1940's as a supply base for naval

submarine vessels. After the War it had been almost abandoned. Since it was transferred to the Government of Panama in the year 1979, it has been operated as a commercial port.

31. The port of Coco Solo Norte has 4 piers divided into 9 berths having a total length of 2,034 meters of berthing space. Piers identified as No. 1 and 4 are marginal; No.2 and 3 are finger piers.

32. Since the port is located in the calm Manzanillo Bay, there are no additional breakwaters. The depth in front of the entrance area of the port was dredged to 13 meters in depth as a waterway to the port of Manzanillo by MIT.

(2) Piers

33. The major facility of this port is Pier No.1. There are two berths with 7 meters depth or more (maximum average depth is 9 meters) and 570 meters length in total at the south side of this pier. At the north side, one more berth with 3 meters depth is located, but it is not in use anymore.

34. There is a warehouse of 8,000 m² and a container yard with an area of 4,140 m² on this pier. The container yard is now conceded and exclusively used on concession to a private company Sealand Co.. Since no container cranes are equipped on these berths, containers are handled by ship gears or mobile cranes. Owing to the new concession described below, this company is considering the possibility of moving to a new place including the port of Cristobal.

(3) The New Terminal (Colon Container Terminal)

35. In September, 1995, Evergreen signed a 20-year concession to build a new container terminal in this port, which is similar to the concession of MIT with some slight modifications. The project is divided into four(4) phases. Phase I is being carried on at a cost of not less than 70million US dollars. The new terminal is capable of handling 400,000 containers annually in this stage, and is expected to begin partial operations in July or August, 1997. Evergreen is accepting partners or customers. The concession contract includes following works to be executed by the concessionaire.

- Restoration, refill, civil work and pavement of twenty five (25) hectares as container yard
- Construction of the port terminal administration building, CFS

- warehouses, equipment maintenance and repair shops
- Construction of quay wall structure for two (2) piers with 612 meters for container vessels.
- Dredging of an access channel, dock maneuver, and also the area adjacent to the pier, as well as the widening and deepening of inner/outer harbor channel and turning basin
- The acquisition and installation of Panamax container cranes (three (3) cranes, initially) for loading and unloading, terminal equipment and all other necessary facilities
- Other miscellaneous constructions including design works, utilities, fencing and the demolition for pier No.2

36. Evergreen operates weekly eastbound and westbound round-the-world full container services through the Panama Canal and the port of Cristobal, based on which it also operates weekly feeder services around the Caribbean Sea. It handled 12,621 containers in total at the port of Cristobal in 1995; 725 containers for local (5.7%), 8,519 for transship (67.5%), 3,377 for Colon Free Zone(26.8%).

37. On the other hand, Evergreen has a plan to establish a maritime school to supply their ships with qualified seaman around the reverted area on the Pacific side. The details, however, including the site of the project, will not be finalized until later this year.

○ The Port of Bahia Las Minas

38. The Port of Bahia Las Minas is located at east of Cristobal next to the TEXACO oil refinery. It consists of the dry cargo area equipped with a marginal pier for general cargo and the petroterminal which serves the oil refinery base located in the backside. The dry cargo area is mainly used for Ro-Ro vessel. It was constructed by the oil refinery company in the year 1974.

39. This port enjoys excellent shelter for safe navigation thanks to its location within a natural bay protected from wind and waves. There is only one marginal wharf for general cargo handling with the usable extension of 90 meters and depth of 7 meters. The navigation channel in the bay is maintained deeper than 11 meters from the entrance of the bay to the petro-terminal which is located next to this wharf.

40. Because of its very narrow space, there is no room for stacking cargo

around the wharf. There is no cargo handling equipment on the wharf.

41. In spite of the poor condition of port facilities, this port handles a large amount of container cargo by rapid Ro-Ro operation.

○ The Project of Petroterminal de Panama

42. In 1995, Petroterminal de Panama, S.A. (PTP) and the Government of Panama signed an agreement to modify their contract for the construction of additional facilities in the ports of Chiriqui Grande and Charco Azul, in order to contribute to commercialize the products of the provinces, Chiriqui and Bocas del Toro.

43. With an initial investment of 15.0 million US dollars from their own coffers, PTP will proceed to expand the port facilities in Chiriqui Grande (one pier of 680 feet long by 80 feet wide, capable of berthing two ships up to 32 feet depth, a container yard with a initial capacity for 300 containers, silos for storage of bulk cargo etc.), and also rehabilitate the occidental trains-isthmian road, from the Panamerican Highway to Chiriqui Grande (95 km with 2 lanes) with an estimated cost of 90 millions US dollars. It will be operated for 20 years. The construction work is expected to be completed in December, 1996. The additional expansion will be carried out, if necessary, as the next phase.

44. As well, in the more distant future, the port facilities of Charco Azul will be expanded to establish a similar port in the Pacific, if it is viable and well planned. It will be expected to work as a "Dry canal" at that time, together with the expanded port of Chiriqui Grande and the rehabilitated occidental trains-isthmian road.

45. On the other hand, the utilization of the pipeline is being planned as a means to transport the crude oil from Colombia and Venezuela on the Atlantic side to the market on the Pacific side in reverse. Additional facilities such as pump stations on the Pacific side will be installed for this purpose.

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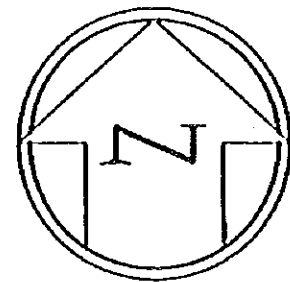
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TOPOGRAPHY AND BATHYMETRY

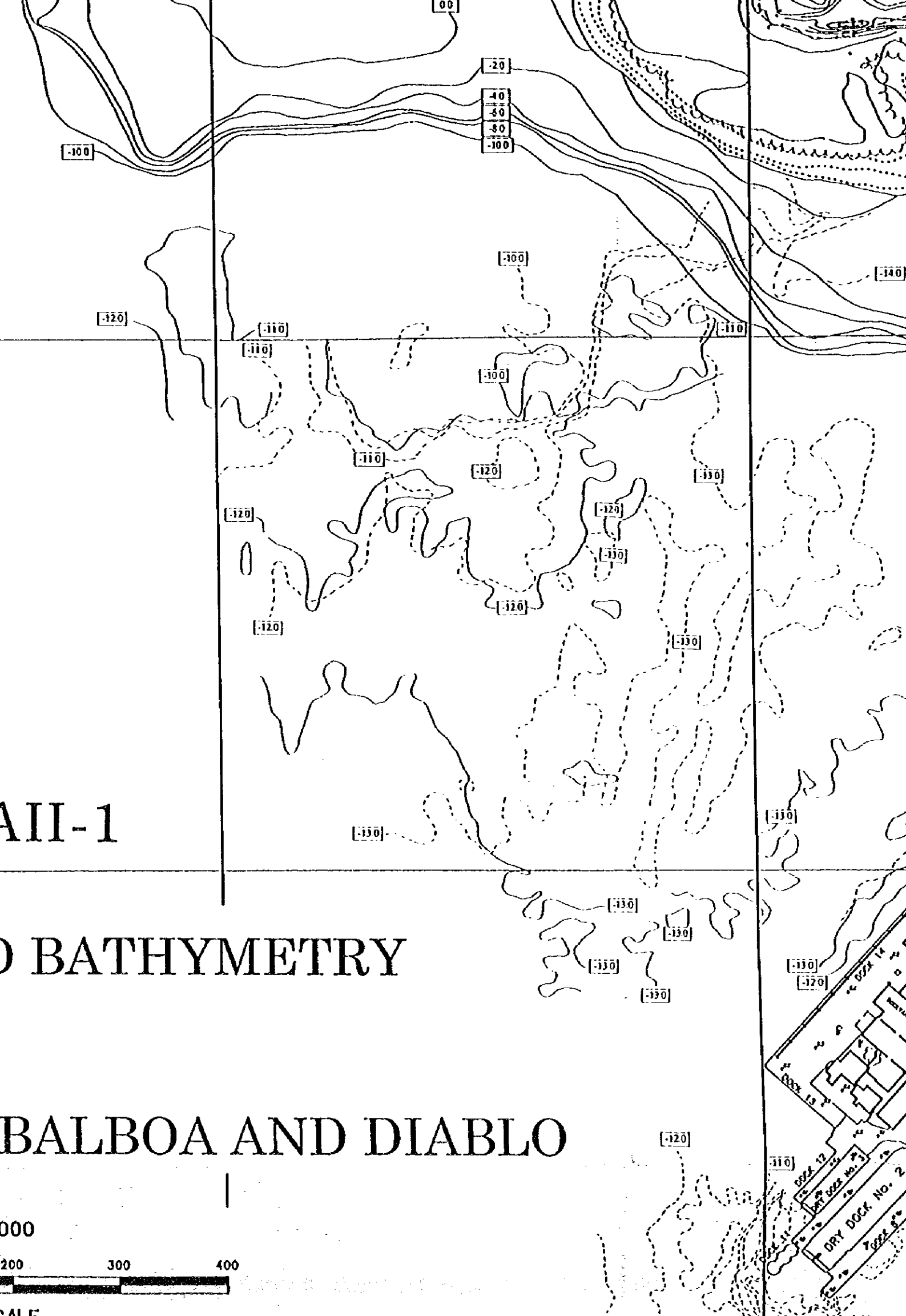
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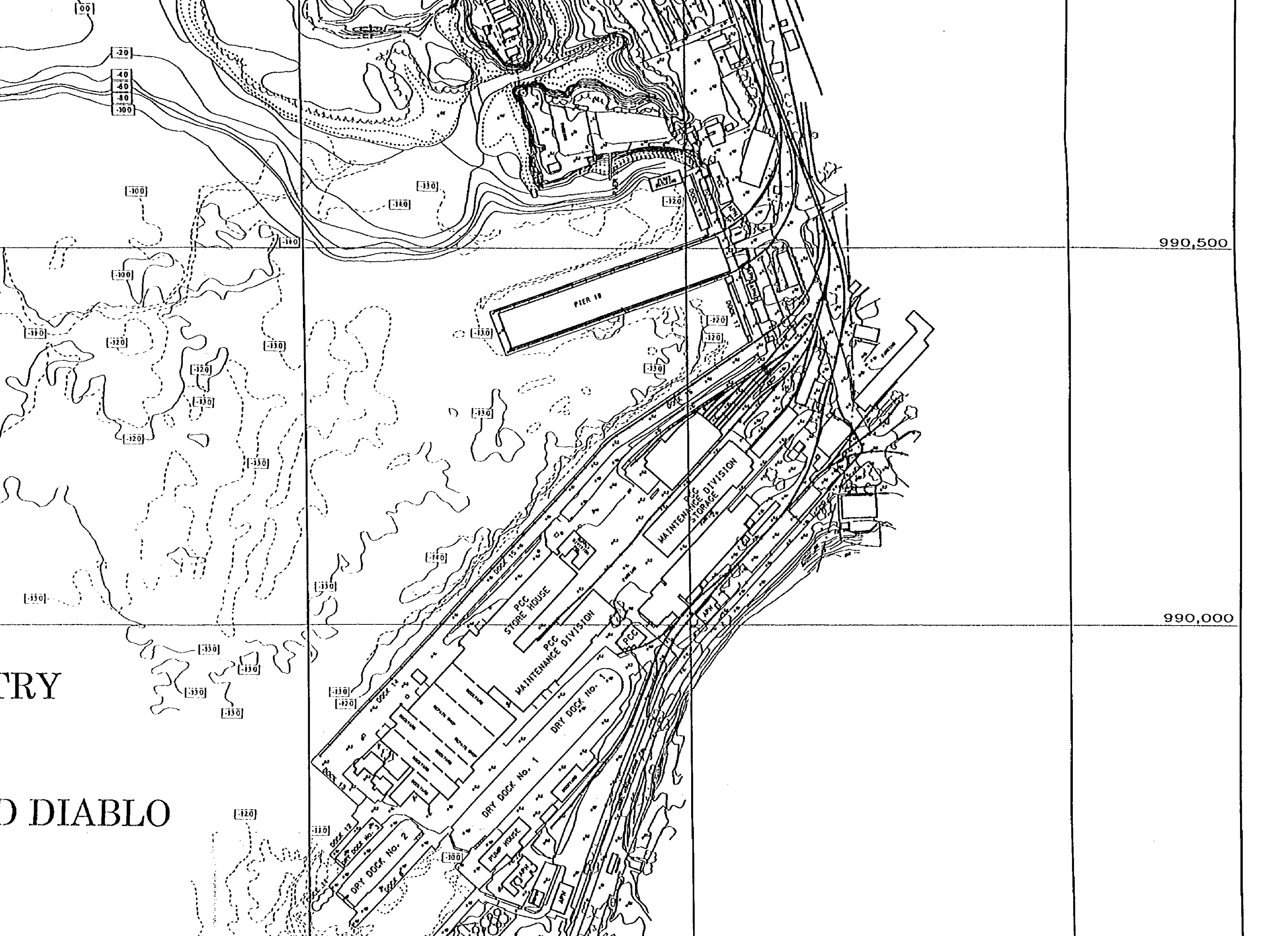
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TOPOGRAPHY AND BATHYMETRY

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	SECONDARY ROADS
	RAILROADS
	HOUSES AND BUILDINGS
	FENCES
	SPOT ELEVATION
	HIGH CONTOUR LINE (2.5m)
	CONTOUR INTERVAL 10.5m
	CONTOUR LINE BELOW MSL
	DRAINAGE
	HIGH TIDE COAST LINE
	ELECTRIC POST
	ANTENNA
	MANHOLE
	TREES

Elevation	
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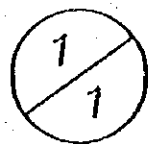


EBASA

E. BARRANCO Y ASOCIADOS, S. A.

INGENIEROS CONSULTORES

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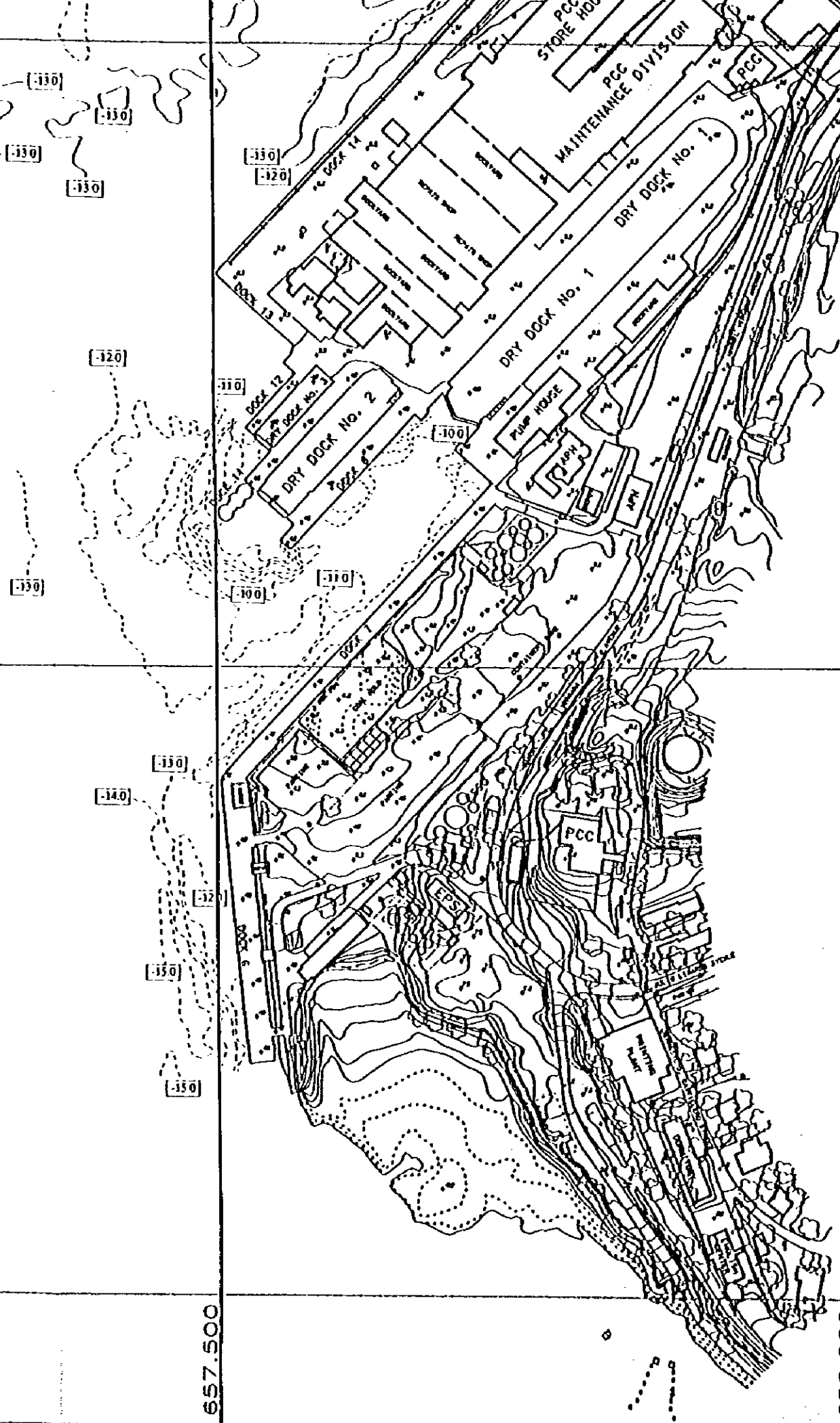
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2.5 : 2.5m above MSL

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